

NOTES ON EXTRA-PHYTOPHAGOUS FOOD SOURCES OF
GELONUS TASMANICUS (LE GUILLOU)
(HEMIPTERA: COREIDAE)
AND *DINDYMUS VERSICOLOR* (HERRICH-SCHÄFFER)
(HEMIPTERA: PYRRHOCORIDAE)

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Abstract

Two species of phytophagous Heteroptera, *Gelonus tasmanicus* and *Dindymus versicolor*, were observed feeding upon extra-phytophagous food sources in Tasmania. The substances fed upon included bird and mammal faeces and dead arthropods and lizards. Adults and nymphs of *D. versicolor* were observed feeding upon these substances, however, only nymphs of *G. tasmanicus* were recorded feeding upon extra-phytophagous food sources. This is the first record of a pyrrhocorid feeding upon such substances.

Introduction

Adler and Wheeler (1984) list 33 species of plant feeding Heteroptera as having been recorded feeding upon extra-phytophagous substances, of which 70% belonged to the families Alydidae and Coreidae. Interestingly, species of pyrrhocorid bug were not cited in this list. The extra-phytophagous substances recorded include bird droppings, dung and carrion. Although carrion has often been associated with the Alydidae, the use of dung by true bugs has rarely been reported (Adler and Wheeler 1984). In addition, these authors reported that only adults had been observed feeding upon such substances, however, Ralph (1976) observed cannibalistic behaviour in *Oncopeltus fasciatus* (Dallas) (Hemiptera: Lygaeidae) nymphs. Dolling (1991) considered that bugs feeding on extra-phytophagous substances may obtain essential nutrients lacking in their normal diet of plant sap. Some evidence to support this suggestion is given by Ralph (1976) who reported that nymphs of *O. fasciatus* fed upon dead and weak nymphs of the same species when reared on nutritionally inferior substrates.

Observations

On the 28.i.1993 large numbers of *Gelonus tasmanicus* nymphs were observed amongst the leaf litter and vegetation beneath *Eucalyptus nitens* (Deane & Maiden) Maiden at a plantation near West Ridgley (41°09'S 145°49'E), northern Tasmania. A collection of 173 individuals comprised 3 I, 98 II, 40 III, 22 IV and 9 V instars and one adult ♀. On this occasion, a number of nymphs ranging from second to fifth instars were observed probing bird droppings found on surrounding grasses and weeds (Fig. 1). The adult female was not observed feeding upon these substrates. These droppings were not recent and thus quite dry. Such behaviour was not

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Figs 1 and 2. (1) Nymphs of *G. tasmanicus* feeding on a bird dropping at West Ridgley, Tas. (scale line = approx. 3.5 mm); (2) A female *D. versicolor* feeding on part of a lizard tail while *in copula*, Dynnyrne, Tas. (scale line = approx. 5.0 mm).

observed in *Amorbus obscuricornis* (Westwood) (Hemiptera: Coreidae) which is also endemic to Tasmania (pers. obs).

Numerous observations of similar behaviour by *Dindymus versicolor* have been made at Dynnyrne (42°54'S 147°16'E), southern Tasmania. Adults and nymphs of this species have been regularly observed feeding upon the bodies of dead *Dindymus* and other arthropods (e.g. millipedes), dead lizards (Fig. 2)

and the droppings of birds and mammals. Typically, large aggregations of bugs can be attracted to such substances particularly when they are fresh and high in moisture. However, bugs will keep returning even when the resource is quite dry. The droppings fed upon by these bugs were not observed to contain seeds or other larval inhabitants upon which the bugs may have been feeding as reported by Adler and Wheeler (1984).

Discussion

Coreids typically feed on the vascular systems of plants while pyrrhocorids are seed and fruit feeders (Schuh and Slater 1995). Whether these phytophagous bugs benefit from "supplementing" their diets with nutrients from such sources remains to be investigated. For example, are these insects increasing the nitrogen content of their diet of plant exudate, which is typically low in this important element, by feeding on such substances? Should bugs be found to enhance the nitrogen content of their diets through ingesting such substances it would be interesting to ascertain whether this behaviour enhances the fecundity of females. For example, Hendrichs *et al.* (1993) found that female *Ceratitis capitata* (Wiedemann) (Diptera: Tephritidae) fed a diet of figs and bird faeces were significantly more fecund than those insects only given figs. Perhaps coincidentally, it is interesting to note that during three years studying *G. tasmanicus* this was one of the largest congregations of this species found and was the only occasion on which first instar nymphs were collected from the field (Steinbauer 1995). Similarly, large numbers of *D. versicolor* survive year round at Dynnyrne (pers. obs).

Also of interest is the mechanism by which these insects metabolise nutrients from these sources. Proteinases are known to occur in phytophagous Heteroptera belonging to the families Lygaeidae, Pentatomidae and Miridae (Miles 1972) and it is possible they are also present in the two species considered here.

Acknowledgments

The supply of original reprints by Dr J. Hendrichs (FAO, Vienna) is gratefully acknowledged. Preparation of this note was made possible thanks to the financial support of a School of Science and Technology, University of Tasmania, writing-up scholarship.

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